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StromSight: A Deep Learning Based Cyclone Intensity Estimation Using INSAT-3D IR Imagery

Abstract

India is an increasingly vulnerable area to tropical cyclones, Especially the eastern side of the Bay of Bengal, where almost 3 cyclones make landfall annually and consequently claim thousands of lives, disturbing agriculture and causing infrastructural damage. Preciseness in anticipating these cyclones is crucial to prevent their loss of lives and material damage. Current weather prediction models are very complicated and dependent on superior computational power and a highly skilled team of meteorologists is required for accurate forecasts. According to the above situation, our project is based on new deep-learning approaches to identify the severity of cyclones together with INSAT-3D infrared data (i.e. IR Images Captured by INSAT Satellite). Our model is based on a Convolutional Neural Network CNN that was trained on a large storm database composed of cyclones. The primary goal of our project is to enhance the accuracy and timeliness of real-time cyclone intensity prediction. By integrating direction estimation, our approach offers a more comprehensive understanding of cyclone behavior, facilitating better disaster preparedness and response strategies. Ultimately, our efforts aim to bolster disaster resilience and mitigate the socio-economic impact of cyclones in vulnerable regions.

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